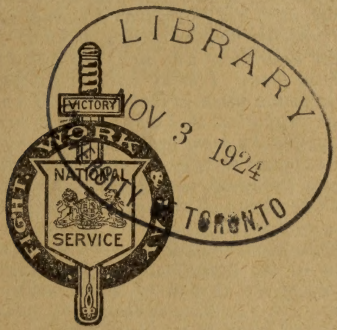
How to Live in War Time



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A MESSAGE FROM THE FRONT.

". . . I believe the time has come when the authority of the State should be invoked to provide reinforcements necessary to sustain the gallant men at the front who have held the line for months, who have proved themselves more than a match for the best troops that the enemy could send against them, and who are fighting in France and Belgium that Canada may live in the future. No one who has not seen the positions which our men have taken, whether at Vimy Ridge, at Courcelette, or elsewhere, can realize the magnitude of the task that is before them, or the splendid courage and resourcefulness which its accomplishment demands. Nor can any one realize the conditions under which war is being carried on. I have been somewhat in the midst of things at the front. Yet I feel that I cannot realize what the life in the trenches means, though I know that I can realize it better than those who have not been as near to the front as I have been. I bring back to the people of Canada from these men a message that they need our help, that they need to be supported, that they need to be sustained, that reinforcements must be sent to them. Thousands of them have made the supreme sacrifice for our liberty and preservation. . . I have promised, in so far as I am concerned, that this help shall be given. I should feel myself unworthy of the responsibility devolving upon me if I did not fulfil that pledge. I bring a message from them, yes, a message also from the men in the hospitals, who have come back from the very valley of the shadow of death, many of them maimed for life. . . . But, is there not some other message? Is there not a call to us from those who have passed from the shadow into the light of perfect day, from those who have fallen in France and in Belgium, from those who have died that Canada may live—is there not a call to us that their sacrifice shall not be in vain? . . ."

—Sir Robert Borden, Prime Minister.

HOW TO LIVE IN WAR TIME.

Thrift — Economy — Production.

"Thrift began with civilization. It began as soon as men realized that it was necessary to provide for to-morrow as well as for to-day. It began long before money was invented. Thrift means private economy as well as the order and management of a family."—Samuel Smiles.

A little book recently issued points out that thrifty people are happy people, because their thrift brings them security and contentment. Therefore, it is fitting for every citizen to think of thrift in its broad aspect and to remember that the prosperity and happiness of the nation are largely founded upon the thrift of its people. Thrift produces simple habits, clean bodies and contented minds. It makes nations great and powerful. Out of the savings of the thrifty come all funds for great public works and industrial enterprises. Without thrift there would be no transportation systems, no investments in community or industrial securities, no great and powerful financial institutions.

The Virtue of Saving.

Smiles says, that it is the savings of individuals which compose the wealth—in other words, the well-being—of every nation. On the other hand, it is the wastefulness of individuals which occasions the impoverishment of states. So that every thrifty person may be regarded as a public benefactor, and every thriftless person as a public enemy. And later he emphasizes, that it is the savings of the world that have made the civilization of the world. Savings are the result of labour; and it is only when labourers begin to save that the results of civilization accumulate. We have said that thrift began with civilization: we might almost have said that thrift produced civilization.

But thrift is not a natural instinct. It is an acquired principle of conduct. It involves self-denial—the denial of present enjoyment for future good—the subordination of natural impulse to reason, forethought, and prudence. It works for

to-day, but also provides for to-morrow. It invests the capital it has saved, and makes provision for the future.

The Necessity for National Thrift.

The great war has brought in its train a tremendous, but largely artificial, prosperity. At the same time, we have been piling up huge responsibilities in the way of an ever-increasing national debt and a vast liability—Canada's debt of honour—for pensions for our maimed soldiers and for the dependents of those who are daily yielding their lives in the present grim struggle for the preservation of human liberty, of democratic institutions, of civilization itself.

For a number of years we will have neither Great Britain nor possibly the United States to draw on for our financial requirements. "For the future," says Collier's Weekly, "if we want to build more railroads or electric plants, or develop more mines, we must supply the money from our own pockets—or go without. The one great necessity put upon us by the war, the biggest economic need in America to-day, is to save money."

It is certain, that for future development Canada will have to rely largely on her own capital, because all of that of Europe will be needed for many years to come to pay the costs of the present war and to make good its ravages. New capital is, in its finality, nothing more nor less than the margin between the income and the expenditure of the citizen. The only way we can accumulate new capital is through the savings of those whose expenditures are less than their incomes and through the development of our vast natural resources by means of these savings. The more people there are who preserve a safe margin between income and outgo, and the greater that margin is, the faster national working capital will be accumulated.

Economy and Character.

Gladstone said: "Economy is near to the keystone to character and success. A boy that is taught to save his money will rarely be a bad man or a failure; the man who saves will rise in his trade or profession steadily; this is inevitable."

The late Marshall Field, the great merchant, gives the following testimony:

"If you want to succeed, save. This is true, not so much because of the value of the money which the young man who saves accumulates, but because of the infinitely greater value of the system and organization which the practice of saving introduces into his life. This result of the saving habit is not generally nor properly appreciated. I consider it to be almost the greatest element in making for a young man's success. In the first place, it creates determination. This is the start. Then it develops steady purpose; then sustained energy. Soon it produces alert, discriminating intelligence. These all rapidly grow into an ability that enables him to take the money he has accumulated (even though small in amount) and employ it with profit. Better and better returns follow up his industry, ability and judgment, and his capital is now steadily increasing. Soon he is secure—and that comparatively early in life; and each day widens the gulf between him and incompetence and its invariable companion, improvidence. This is the real framework of the structure of success. Each of its supports, it will invariably be found, rests upon a foundation of an early dollar saved."

Thrift is not Avarice.

Lord Rosebery, the great British statesman, said: "Whatever thrift is, it is not avarice. Avarice is not generous; and after all, it is the thrifty people who are generous. All true generosity can proceed only from thrift, because it is no generosity to give money which does not belong to you, as is the case with the unthrifty. And I venture to say that, of all the great philanthropists—all the great financial benefactors of their species of whom we have any record—the most generous of all must have been thrifty men."

Smiles expressed the same views:

"We do not in the least advocate the formation of miserly, penurious habits; for we hate the scrub, the screw, the miser. All that we contend for is, that men should provide for the future; that they should provide during good times for bad times which almost invariably follow them; that they should lay by

a store of savings as a break-water against want, and make sure of a little fund which may maintain them in old age, secure their self-respect, and add to their personal comfort and social well-being. Thrift is not in any way connected with avarice, usury, greed, or selfishness. It is, in fact, the very reverse of these disgusting dispositions. It means economy for the purpose of securing independence. Thrift requires that money should be used, and not abused—that it should be honestly earned and economically employed....."

Canada—A Nation of Workers.

Canada in these days of stress needs the whole-souled support of every one of her citizens. She needs their services in every avenue of human activity. Each citizen must serve, work and pay to the very utmost of his or her ability. This is no time for drones. There are tasks to be accomplished in the national interest within the limitations of everyone. At this time every citizen in his own sphere should consider it a privilege to consecrate his time and talents to increase the national power of resistance by speeding up production and by turning his hand, cheerfully and willingly, to any available useful work, however unaccustomed he may be to such an effort. Complete happiness has been defined as the mental state resulting from "a congenial job well done"—another exemplification of the old adage: "Virtue is its own reward." To again quote Smiles: "Labour is at once a burden, a chastisement, an honour, and a pleasure. It may be identified with poverty, but there is also glory in it. It bears witness, at the same time, to our natural wants and to our manifold needs. What were man, what were life, what were civilization, without labour? All that is great in man comes of labour—greatness in art, in literature, in science. Knowledge—"the wing wherewith we fly to heaven"—is only acquired through labour. Genius is but a capability of labouring intensely; it is the power of making great and sustained efforts. Labour may be a chastisement, but is indeed a glorious one. It is worship, duty, praise, and immortality—for those who labour with the highest aims and for the purest purposes."

Household Leaks.

Miss B. M. Philp, of Macdonald College, urges every Canadian woman, as a necessary war measure, to at once examine the details of her household expenditure. How much of the income is devoted to necessities, how much to luxuries? Stop the latter at once or by degrees. Is the expenditure for the actual necessaries of life wisely made? Does she secure full value? The physical necessities of life may be grouped under the headings: shelter, food and clothing. Shelter includes rent, or its equivalent, and the running expenses of a home, such as light, fuel, taxes, laundry, repairs, wages, telephone, etc. Scrutinize each of these "overhead" expenses carefully. Switch off the electricity when not in use and do with fewer lights. Learn to run the stove and furnace economically. Fuel will be at a premium this winter. Turn off the gas directly instead of leaving it burning, even for a minute or so, after the food is cooked, and make use of the simmerer more frequently. Watch the bread box. Waste there is criminal. Keep the soap dry and thus eliminate wastage. Learn to take care of furniture and household equipment. Insist that every member of the family does likewise. Even the boisterous small boy will respond to the appeal when he realizes that he is thus helping to win the Empire's battles.

The average Canadian household is not organized with a view to the greatest measure of efficiency. The possibilities in the way of economies are enormous. It has been calculated that on the average each Canadian family wastes enough to feed a soldier! The most satisfactory economies that may be effected are in small things. They involve no sacrifices or even discomforts. On the contrary, they promote orderly habits, simplify routine and contribute materially to domestic happiness.

WHAT ARE YOU DOING TO WIN THE WAR?

From "National Organization for War," by Stephen Leacock.

THE months through which we are now passing are critical for the fate of the British Empire. The war has lasted nearly three years. There is no sign of an end. Our enemies have devastated Belgium and enslaved its people. They have overrun Poland and taken to themselves its vast resources in corn and food. The iron of Lorraine, the salt mines of Galicia and the oil fields of Roumania are in their hands. They stand firmly entrenched on the western front from the sea to Switzerland. Their own coastline from Holland to Denmark has thus far proved impregnable. . . .

Where is our Sacrifice?

We only deceive ourselves if we hide the fact that the fate of the war—and with it all that is best in the world—hangs in the balance.

Our soldiers in the field have done, and are doing, all that heroism can inspire and all that endurance can fulfil. Are we doing our share at home? We go about our tranquil lives scarcely disturbed. Here and there, the swift dart of death, that strikes "somewhere in France," reaches, with its double point, somewhere in Canada, a mother's heart. We pause a moment in our sympathy, and pass on. To and fro we go about our business. We pay our easy taxes, and subscribe to our so-called patriotic loan, so issued that the hungriest money-lender in New York is glad to clamour for a share of it. We eat, drink, and are merry, or, at least, not sad, professing a new philosophy of life as our sympathies grow dull to the pain and suffering that we do not share.

Are we, the people of Canada who are at home, doing our proper part to help to win the war?

National Organization.

If a war were conducted with the full strength of a nation, it would mean that every part of the fighting power, the labour, and the resources of the country were being used towards a single end. Each man would either be fighting or engaged in providing materials of war, food, clothes and transport for those that were fighting, with such extra food and such few clothes as were needed for themselves while engaged in the task.

This is a war economy. This is the fashion in which the energies of a nation would be directed if some omniscient despot directed them and controlled the life and activity of every man.

A nation so organized, if it were possible, would be multiplied as ten to one.

In place of it look about us. Thousands, tens of thousands, millions of our men, women and children are engaged in silly and idle services or in production that is for mere luxuries and comforts and that helps nothing in the conduct of the war. . . . Such people, though they work fourteen hours a day, are but mere drones in the hive as far as the war is concerned. Every crippled soldier that comes home and looks upon our so-called busy streets feels this by instinct, with something, perhaps, like hatred in his heart. . . .

Prosperity and Pleasure.

But people either do not, or will not, know this. They still want their industry and its inflated gains, and War Prosperity with the flush on its hectic face and War Pleasure with its strident laugh, dancing away the midnight hours. In and through it all moves smug hypocrisy, suggesting the little words and phrases that are to salve the soul; teaching the manufacturer to call himself a patriot as he pockets his private gains, and to shout for trade, more trade, that he may cram his pockets the fuller; teaching all the drones and parasites, the lawyers, the professors, the chefs and the piano players, the actors and the buffoons, that in going on with their business they are aiding in the conduct of the war.

"Business as usual," shouted some especial idiot at the outset of the war. The cry was like to ruin us.

Drastic Remedies.

What then are we to do? By what means can we change from an economy of peace and industrial selfishness to an economy of effort and national sacrifice? There are two ways in which this can be done; one that is heroic and impossible, another that lies easy to our hand.

The first is the method that nations adopt only in their despair, only in the last agonies of foreign conquest, as when Richmond fell, or when the Boers fought on in grim desperation across the naked veldt. Here national production ends, save only for necessary food and war supplies. Private industry is gone. Luxury is dead. All of the nation's men are gathered into a single band. They do as they are told. They fight, they work, they die. Its women are in the fields; or they are making bandages; they tend the sick; they pray beside the dying.

With Back Against the Wall.

Thus can a nation stand, grim and terrible, its back against the wall, till it goes down, all in one heap, glorious. In the wild onslaughts of the great conquests of the past, nations have died like this.

But for us, here and now, and in the short time that we have, this is not possible. Outside invasion could force us to it, in a jumbled wreck, with no choice of our own. But to accomplish this at a word of command inside our present complex industrial system is not possible. It is too intricate, too complicated, to be done by command from above. To enlist every man and woman in an industrial army, to direct their work and assign their rations—in other words, to create an ideal national war machine—is a task beyond the power of a government. Years of preparation would be needed.

National Thrift.

What we do must be done from below, using, as best we can, the only driving force that we know—the will of the individual.

We must exchange war prosperity for war adversity, self-imposed and in deadly earnest. The key to the situation, as far as we can unlock it, lies in individual thrift and individual sacrifice. Let there be no more luxuries, no wasted work, no drones to keep, out of the national production. Every man, to-day, who consumes any article or employs any service not absolutely necessary, aims a blow at his country.

Save every cent. Live plainly. Do without everything. Rise early, work hard, and content yourself with a bare living. The man who does this—if he uses the saved money properly—is doing war work for his country. He may wrap his last year's coat about him and eat his bread and cheese and feel that he, too, is doing something to show the world the kind of stuff that is yet left in it.

BUT HE MUST USE HIS SAVINGS PROPERLY. THAT IS THE WHOLE ESSENCE OF THE MATTER. .

Patriotic Investment.

Every cent of the money that can be gathered up by national thrift should be absorbed by national taxes and national loans. ..... We need a blast of taxation—real taxation, income tax and all, that should strike us like a wave of German gas. As things are, we should go down before it. Armed with the new gas helmet of national thrift we could breathe it easily enough and laugh behind our goggles.

Over and above the taxes we need a succession of Government patriotic loans, not money-lender's loans at market and supermarket rates, but patriotic loans in the real sense.....

The people, one says, will not subscribe. Then, if not, let us perish; we do not deserve to win the war.

But they will subscribe.

Serving by Saving.

If, under the auspices of our Government, a national campaign for thrift and investment is set on foot; if we give to the ideas all the publicity that our business brains can devise, if we advertise it as commerce advertises its healing oils and fit-right boots and its Aphrodite corsets, then people will subscribe, tumultuously, roaringly, overwhelmingly.

If not—if that is the kind of nation that we are—let us call our soldiers home from the western front. They are fighting under a misunderstanding. The homes that they are saving are not worth the sacrifice.

But first let the Government—of the dominions, the provinces, the cities and the towns—itself begin the campaign of thrift. At present vast sums of money are being wasted in so-called public works, railways in the wilderness, cement sidewalks in the streets, post offices in the towns—millions and millions that drain away our economic strength.

In time of peace these are excellent. For war, unless they have a war purpose the things are worse than useless. The work of the men who labour at them is of no value, and the food and clothes that they consume must be made by other men.

War Economics.

Let us be done with new streets and new sidewalks, new town halls and new railways, till the war is done. Let us walk in our old boots on the old boards, patriots all, with dollar pieces jingling in our pockets adding up to twenty-five for the latest patriotic loan.

Let us do this, and there will pour into the hands of the Government such a cascade of money that the sound of it shall be heard all the way to Potsdam.....

SELF-SACRIFICE AND SELF-DENIAL.

Extracts from speech by Sir Thomas White, Minister of Finance.

WHAT is the call? The call is for men, for munitions, for money. They can only be had by self-sacrifice and by self-denial. The call is for men and evermore for men. Those of the sons of Canada who go to the front, the mothers and the wives and sisters who send them forth, are exhibiting the highest quality of self-sacrifice.....

Work and Save.

What is the duty of those not of military age or those who for some other reason cannot go to the front? Every man and every woman in Canada can help win this war by practising self-denial. It is the bounden obligation of every man, of every woman, in Canada to work harder and produce more, to cut down luxurious unnecessary expenditure and to save money for the purposes of the war. This war is going to be determined, as nearly all great wars are determined, notwithstanding the fluctuating swaying fortunes of battles here and there, by attrition, the wearing down process, the preponderance of force of every kind of man-power, industrial power, money power, agricultural productive power.

What, therefore, is the duty of the individual Canadian who cannot go to the front and who is searching his heart as to what is his duty? Work harder. War is a terrible realist. Among other things, it makes us realize our own power!

Are you an Asset or a Liability?

Every citizen who uses more in his household than his household actually needs is increasing the cost of living for those less fortunate and he is hindering the prosecution of the war. He may not look at it in that way, but it is so. He is consuming something that is not indispensable and by doing so is denying something to his neighbour who may have a small salary. Let the nation tighten its belt and you will find the cost of living come down. In war time there is a great circulation of money and people spend more, consume more, where they should consume less.....

Canada Needs your Savings.

What further results from this? National saving follows. Men save their money, women save their money and the money is available to the Government of the country for the purposes of the war, otherwise they could not carry on the war. The most decisive factor in this war to-day is the British Empire. Why? Because of her enormous resources and wealth. That wealth and those resources must be brought to bear by increasing production, by harder work and by limiting luxurious expenditure. Increased production and increased savings mean increased national strength. I have described it as self-denial, but really, it is not much in the way of self-denial, because it is good for the nation. It is good for every man and woman in the nation to work harder, within, of course, the limits of health; to cut down luxurious expenditure, to save money.....

Are you Doing your Share?

Now, is it too much, in view of all the sacrifices to which I have referred, if we are asked to deny ourselves those things which we do not need, which perhaps we are better without, and to put forth every productive energy of which we are capable? The call is for men; the call is for munitions; the call is for money. These can be obtained only by self-sacrifice and by self-denial. Men and women are asking the question: "What can I do to help?" I have told you what, in my view, is the national duty. I have confidence that the people of Canada will discharge this duty. Men are beginning to ask themselves: "Am I doing my share manfully, patriotically, justly, as between myself and those who have gone to the front fighting for me?"

A Compensation.

I believe that the greatest good will come to humanity from this mighty conflict, by the touching of the conscience of the world. Sacrifice, as I said at the outset, lies at the basis of religion and of all sound individual and national development. .....Out of the welter of this great conflict, this appalling struggle with its outpouring of blood and treasure, with all its hideous barbarities and cruelties, with the violent passions it has excited, will come a higher and more glorious civilization and a nobler manhood and womanhood than has been.

THE FOOD QUESTION.

THE spectre of starvation is abroad. Warnings of an impending shortage of food come from every part of the globe. The terrific struggle going on in Europe, which has resulted in withdrawing some 60,000,000 workers from productive work and diverting their labour largely into destructive effort, has brought about an economic situation which threatens us all.

Light-hearted people argue that Canada, being a vast agricultural country, cannot possibly suffer from lack of food even under the most adverse conditions. There is some truth in this assertion, but it is only partly true. A general world food shortage necessarily involves high prices, and high prices are automatically followed by suffering on the part of those who cannot afford to buy sufficient food at famine prices. We may, therefore, take it for granted, that a serious general food shortage is likely to bring many people, even in Canada, face to face with actual privation.

The Crime of Wastefulness.

"Waste in time of peace is a sin; in this time of national stress it is a crime."

—Sir Robert Borden, Prime Minister.

Strenuous efforts are being made to increase food production. There is, however, another way in which the situation can be relieved, namely, by economy and elimination of waste, which has precisely the same economic effect as increased production. To practise economy in food, the housekeeper should understand how to buy economically, that is, to buy *the right things with the money spent so as to get adequate food value for the outlay.*

Every housewife who carefully scrutinizes each particular item of household waste, is performing a National Service at this time. The following striking statement by Mr. Houston, Secretary for Agriculture for the United States, on the food situation, applies with equal force to Canada:—

". . . For partial immediate relief, every individual and community should consider earnestly the matter of food conservation and the limitation of waste. As a nation we seem to have a disdain of economizing. In many homes there is a strong feeling that it is "only decent" to provide more food than will be eaten and that it is demeaning to reckon closely. The experts of the Department of Agriculture report to me that the dietary studies made by them point to an annual food waste of about $700,000,000. Of course, the waste in families of very limited means is slight, but in the families of moderate and ample means the waste is considerable. Even if the estimate were reduced by half, the waste would still be enormous. The food waste in the household, the experts assert, results in large measure from bad preparation and bad cooking, from improper care and handling, and, in well-to-do families, from serving an undue number of courses and an over-abundant supply, and failing to save and afterwards utilize the food not consumed. . . ."

The Soaring Family Budget.

Apart entirely from any motive of public duty, few families in Canada can to-day afford to spend "as usual". The high prices of some foods have made it necessary to reduce the quantities usually consumed and to use instead cheaper foods or those which have not risen so steeply. The following comparisons of prices of the more important household necessities, covering corresponding periods during four years, are instructive. These figures have been compiled by the Department of Labour and represent the average cost in sixty Canadian cities. They are based on the approximate amount of food, etc., consumed in a week by a family of five persons and should be carefully studied.

Comparative Table—Cost of Living.

Commodities.	Quantity	July 1914	July 1915	July 1916	July 1917
		Cents.	Cents.	Cents.	Cents.
Beef, sirloin steak	2 lbs.	49·4	49·2	52·6	63·6
Beef, shoulder roast	2 lbs.	33·6	33·4	35·2	43·5
Veal, roast	1 lb.	17·4	17·3	19·2	22·8
Mutton, roast	1 lb.	20·9	21·3	23·9	28·9
Pork, fresh roast	1 lb.	20·2	19·5	22·4	30·0
Pork, salt, mess	2 lbs.	37·4	34·4	38·8	54·1
Bacon, breakfast	1 lb.	25·5	26·6	28·7	39·8
Lard, pure leaf	2 lbs.	36·8	35·8	40·4	62·3
Eggs, fresh	1 doz.	26·9	25·3	31·0	38·8
Eggs, storage	1 doz.	24·9	24·9	28·0	35·9
Milk	6 qts.	51·0	52·2	45·0	59·3
Butter, dairy	2 lbs.	49·8	56·2	60·4	75·5
Butter, creamery	1 lb.	30·0	32·6	34·5	42·5
Cheese, old	1 lb.	21·1	24·6	25·6	33·4
Cheese, new	1 lb.	19·4	22·6	23·6	30·3
Bread, plain white	15 lbs.	63·0	79·5	70·5	110·4
Flour, family	10 lbs.	33·0	41·0	37·0	69·9
Rolled oats	5 lbs.	21·5	26·0	24·0	31·4
Rice, good medium	2 lbs.	11·6	11·8	13·4	16·8
Beans, handpicked	2 lbs.	11·8	14·8	19·4	31·5
Apples, evaporated	1 lb.	13·1	11·9	13·4	15·8
Prunes, medium	1 lb.	12·4	13·1	13·1	15·5
Sugar, granulated	4 lbs.	22·0	31·9	38·4	39·5
Sugar, yellow	2 lbs.	10·2	14·6	17·6	18·3
Tea, black, medium	¼ lb.	9·1	9·5	9·9	11·6
Tea, green, medium	¼ lb.	9·3	9·8	10·3	11·3
Coffee, medium	¼ lb.	9·4	9·8	10·0	10·1
Potatoes	2 pks.	50·3	29·3	58·6	118·2
Vinegar, white wine	½ pt.	0·7	0·8	0·8	0·8
All foods		$7.41	$7.79	$8.45	$11.61
Starch, laundry	1-3 lb.	3·2	3·3	3·3	4·0
Coal, anthracite	1-16 ton	53·2	52·1	54·7	63·2
Coal, bituminous	1-16 ton	38·0	35·8	38·0	53·8
Wood, hard	1-16 cord	42·5	41·7	42·9	52·0
Wood, soft	1-16 cord	31·8	30·6	30·2	39·7
Coal oil	1 gal.	23·5	23·4	22·8	25·6
Fuel and lighting		$1.89	$1.83	$1.88	$2.34
Rent		$4.82	$4.09	$4.04	$4.37
Grand total		$14.16	$13.76	$14.41	$18.37

Striking Possibilities.

To indicate the enormous possibilities in the way of economical diet, Professor Graham Lusk, Scientific Director of The Russell Sage Institute of Pathology, has made a detailed calculation to determine the actual cost of feeding a group of poor people in the State of New York. The following is a quotation from his final statement on the subject:—

". . . *The actual cost price of this meal of hot pork and beans, bread and butter, and a cup of hot coffee and milk is 4¼ cts, excluding labour and rent, but including the coal used. The 2,500 calories required to maintain a man out of work on this diet would cost 10.6 cents a day, or $38.70 a year. . . . A similar menu, just as cheap, can be based on spaghetti, flavoured with tomato or cheese. It is not argued that a diet based on the cheaper foods is a panacea for all the woes of the world. It is not argued that such diets are the equivalent of caviar, champagne, and canvas-back ducks, but it is argued that good wholesome simple food should be more available for mankind at a moderate price in hours of adversity and distress than is the case to-day. People should know how they can conserve their resources without detriment to their bodily welfare.*"

Food—What is it?

Food has been defined as "a well-tasting mixture of materials of such a composition that the body is not injured by its use, and of sufficient quantity to maintain the body in good condition." The three points to be borne in mind in connection with food are: Flavour, Composition and Quantity.

The value of flavour is something that does not lend itself readily to scientific demonstration. It is, however, certain that appetizing and well-served food is more easily assimilated than dishes that the individual has no special liking for or which are not served in an attractive manner. This publication does not deal with those phases of diet, and they are mentioned only to direct attention to the fact, that the importance of flavour and service should by no means be overlooked.

No absolutely rigid rule can obviously be laid down as to diet. "Study thyself" is a wise admonition. Individual preference and digestive limitations and peculiarities are factors that cannot be safely ignored.

TO THE WOMEN OF CANADA.

In the following pages, Mr. V. H. Mottram, M.A., deals largely with the scientific side of the problem of food economy. He has made a special study of the subject, and his observations are of peculiar interest and value at the present moment. I earnestly urge upon every housewife in Canada the most careful reading of these pages. The rigid conservation of food materials and the most complete elimination of household waste are objects of supreme national importance during this world crisis, and may be for some years to come. I feel confident that the women of Canada will nobly rise to the occasion. Each housewife can render this valuable National Service within her own home and in doing so, *she helps not once, but thrice.* She will "do her bit" in augmenting the food resources available for the boys overseas; with her savings she will be able to help Canada finance the war and thus, incidentally, fortify the family position in meeting any after-the-war stress and, lastly, by restricting demand, she will automatically assist less fortunate families to buy food at lower prices. Surely no Canadian woman, however affluent her circumstances, can lightly dismiss responsibilities of so grave a nature.

W. J. HANNA,
Food Controller.

Ottawa, July, 1917.

ECONOMY IN DIET.

By V. H. Mottram, M.A. (Cantab.)
Lecturer in Physiology, Univ. of Toronto.

THERE is little doubt that many reasonable economies can be made in the consumption of food. But it must be recognized that *any economy in food must be based on sound research.* Particularly dangerous are fads such as the "fruitarian," and "unfired food," and the "strict vegetarian" dietaries.

It is the purpose of this publication to give the data upon which a reasonable dietary can be based and to show how such knowledge can be used in practising an economy that shall not be dangerous to health.

The Function of Food.

We take food for two main reasons:

(1) *To provide energy, whether heat or muscular energy, and.*

(2) *To enable the body to grow and to repair waste or damage to tissues.*

In Part 1 of the following pages the way in which food provides energy is explained. Comparisons of various foods are given, indicating to what extent they meet the requirements when considered from the standpoint of fuel value only.

As mentioned above, however, there is another main reason why food is taken. Part II deals with the requirements of the body as regards growth and repairs, and explains what foods should be eaten in order best to supply these needs and to furnish "roughage" to promote the more efficient mechanical action of the digestive organs.

PART I.

FUEL VALUE OF FOOD.

The Human Machine.

In many respects the human body resembles a machine. In the steam engine, coal or oil is consumed and the energy obtained is transformed into work or heat. In a similar way the body takes the food we eat, turns it into a combustible form, and then burns it. Energy is thus obtained and is used either for the performance of work or in maintaining the temperature of the body. Even when the body is apparently at rest (e.g., when lying in bed), work is being done. The heart is beating and forcing blood into the arteries against pressure, and in breathing, work is being done in raising the chest and abdominal walls. The source of this energy is food.

Food Constituents.

Every sane dietary contains proteins, fats, carbohydrates, mineral salts, "roughage," "accessory factors," and water. Of these, in the discussion of fuel values, proteins, fats, and carbohydrates only concern us. Proteins are highly complex substances, widely distributed through foodstuffs, the most familiar being egg-albumin (found in large amounts in the white of egg), casein (found mixed with fat in the curd of milk), and the proteins of meat. Fats are familiar enough to need no further definition, while carbohydrates include such foods as table sugar, and are found in large amounts in flour, oatmeal, bread and crackers.

Converting Food into Energy.

Now, the body takes fats and carbohydrates and burns them with much the same results as are obtained if a chemist burns them in an atmosphere of oxygen, or if you burn wood in a stove. Both classes of substances burn to form carbon-dioxide and water, and in so doing give off a definite amount of heat which is always the same for any one substance. Thus one unit by

weight of carbohydrate gives off four units of heat, and one unit of weight of fat gives off nine. Exactly the same happens in the body. Elaborate experiments have proved this beyond the shadow of a doubt. Proteins are also burned in the same manner, but the combustion is incomplete. Protein yields 4 units of heat per unit of weight when burnt in the body.

The Scientific Heat Unit.

The unit of heat adopted in dietary studies is the "great calorie," popularly referred to as "energy unit." To give a concrete idea of what this unit is, we may explain that, if you warm $2\frac{1}{5}$ pounds of water all the way from freezing point to boiling point, you utilize 100 "great calories" (energy units).

Given the above facts, one can easily calculate the energy derivable from a given foodstuff or dietary. You need merely to find out how much protein, fat, and carbohydrate the food contains, multiply by the factors given above and add up the result. Analyses of all ordinary foods have been published by the United States Department of Agriculture.

In this or other ways the following tables have been calculated.

*Calorie Requirements per Day.

Table I.

A. Calorie (Energy) values of dietaries required by the following types of workers.

	Great calories (energy units) per day.
Seamstress sewing with needle	1800
" " machine	2000
Household servants	2300–2900
Washerwomen	2600–3400
Tailors	2400–2500
Bookbinders	2700
Shoemakers	2800
Metal-workers	3100–3200
Painters and carpenters	3200–3300
Tombstone makers	4300–4700
Sawyers	5000–5400

*Adapted from tables given by Lusk in (1) The Fundamental Basis of Nutrition, Yale Univ. Press, and (2) Analysis and Cost of Ready-to-serve Foods, Press of American Medical Association.

Table I—*Continued.*

B. Estimated food requirements for the following classes of workers

Occupations—	Great calories (energy units) per day.
Sedentary	2500
With light manual work	3000
" medium manual work	3500
" heavy manual work	4500–5000

It will be seen from the preceding table that, on the whole, the calorie (energy) value of a diet depends on the kind of work done. The more manual work done, the greater is the energy value required from the food. A dietary yielding 6,000 great calories (energy units) is not too much for workers in lumber camps.

Average Requirements.

Analyses of the diet of a number of people doing sedentary work (clerks, teachers, professional men, etc.) show that the average energy value required is *2500 great calories.* This we may take as a standard, recognizing the fact, that if much manual work is done, or if the person concerned works in the open air, more food must be consumed. Fortunately, in normal persons, the appetite is a fairly reliable guide to requirements.

Assuming, then, that the average man requires 2500 energy units (technically called " great calories ") per day, the next question naturally is from what foods he is to obtain them. Figures are fortunately available covering nearly every conceivable foodstuff, from patent breakfast foods to pickles. The figures on the next page are from tables published by the U.S. Dept. of Agriculture.

Table II. Calorie (Energy) and Protein Values of Foodstuffs as purchased on the Retail Markets.

SOUPS.	Energy Units per lb.	Protein contents per cent.
Bouillon	50	2·2 A
Chicken	100	3·6 A
Tomato	185	1·8 A & B
Cream of Celery	250	2·1 A & B
FISH.		
Cod	165	8·4 A
Haddock	165	8·4 A
Flounder	115	5·4 A
Halibut	470	15·3 A
Herring	375	11·2 A
Mackerel	365	10·2 A
Salmon	660	15·3 A
Shad	380	9·4 A
MEATS.		
Beef ribs—		
Very lean	475	19·4 A
Lean	675	15·2 A
Medium fat	1155	13·9 A
Fat	1525	12·7 A
Very fat	1780	13·7 A
Porterhouse steak	1110	21·9 A
Sirloin steak	985	18·6 A
Round of beef	745	19·2 A
Pork (loin chops)	1340	13·2 A
Ham	1670	14·5 A
Bacon	2685	9·5 A
Turkey	1075	16·1 A
Mutton (leg)	1130	16·0 A
VEGETABLES.		
Beans (dried Lima)	1625	18·1 B
Cabbage	145	1·4 B
Carrots	160	0·9 B
Cucumbers	80	0·8 B
Onions	205	1·4 B
Potatoes	310	1·8 B
Tomatoes	105	0·9 B
Turnips	125	0·9 B

FRUITS.	Energy Units per lb.	Protein contents per cent.
Fresh Apples	220	0·3 B
" Bananas	300	0·8 B
" Grapes	335	1·0 B
" Oranges	170	0·6 B
Dried Currants	1495	2·4 B
" Dates	1450	1·9 B
" Figs	1470	4·3 B
" Raisins	1445	2·3 B
DAIRY PRODUCE.		
Eggs	635	11·9 A
Butter	3605	1·0 A
Cheese (red)	2165	29·6 A
" (cream)	1950	25·9 A
Milk (whole)	325	3·3 A
" (skimmed)	170	3·4 A
CEREALS AND FLOUR.		
Oatmeal	1860	16·1 B
Barley	1660	7·5 B
Rice	1630	8·0 B
Graham flour	1670	13·3 B
Wheat flour (white)	1625	7·9 B
BREAD AND BISCUITS.		
Brown bread	1050	5·4 B
White bread	1215	9·2 B
Soda crackers	1925	9·8 B
BEVERAGES.		
Cocoa	2320	21·6 B

Note: A—Animal Protein; B—Plant Protein. See Part II, "Growth and Maintenance Value of Food."

The foregoing figures represent the energy value of the various foods in the state in which they are generally bought on the retail market, inclusive of bone, shell, hulls, or what not. Any loss of material in the process of preparation for consumption must, therefore, be allowed for. With reasonable cooking there should be no loss of energy value. Any fat that cooks out of the meat can readily be utilized in other dishes.

Popular Fallacies.

Some of the results will appear surprising. For instance, *clear soups*, bought ready for use, or made from meat extracts, from the fuel value point of view *are almost worthless*. One pound of bouillon (the average can contains $12\frac{1}{2}$ ounces), or clear soup, will yield 50 energy units only. It is difficult to persuade people that *clear soups and meat extracts* do not contain the strength of the meat from which they are made. The truth is, that they *are little more than flavoured water*. The energy value of soups depends almost entirely on the solid meat, the fat and the vegetables or cereals they contain.

Meats vary widely according to the amount of fat they contain, and consequently vary markedly in energy value. Very lean ribs of beef will yield only 475 energy units per pound, while very fat ribs yield 1,780. As might be expected, the yield of bacon is very high, and, in spite of present high prices, bacon is still an economical food if all the fat is used. Among dairy produce, butter and cheese give high yields, while eggs are disappointingly low.

Fresh vegetables and fruit show low yields, while dried vegetables and fruit, e.g., raisins, dates, etc., give moderately high yields of energy. Farinaceous foods—flour and the substances made from it, such as bread and biscuits—give a satisfactory account of themselves.

The clearest way to show the economic value of foodstuffs is to calculate the cost of a thousand energy units from them. In calculating the figures of the various foods in Table III, the retail costs in Toronto during the first fortnight of December, 1916, have been used.

The method of calculation is extremely simple. Thus, 1 pound of soda crackers (yielding 1,925 energy units) costs 15 cents. Therefore, 1,000 energy units cost $\frac{15 \times 1{,}000}{1925} = 7 \cdot 8$ cents. Table III has been calculated in this way.

Table III.

Cost of Foodstuffs per 1,000 energy units.

	Cost per 1,000 Energy Units.
CLASS I.	$ cts.
Oatmeal	0 03·3
Graham flour, Wheat flour	0 03·7
White bread	0 04·5
Cane sugar	0 05·4
Brown bread	0 07·1
Potatoes	0 07·7
Lima beans (dried)	0 07·7
Crackers	0 07·8
Bacon	0 09·7
CLASS II.	
Raisins	0 11
Cheese (red)	0 13
Dates	0 13·8
Butter	0 14
Milk	0 15
Maple sugar	0 15
Ham	0 15½
Currants	0 16
Beef (medium fat ribs)	0 16½
CLASS III.	
Figs	0 20
Pork (loin chops)	0 23
Sirloin steak	0 23
CLASS III—*Continued.*	
Porterhouse steak	0 24
Bananas	0 25
Cream cheese	0 26
Beef (lean ribs)	0 28
CLASS IV.	
Salmon	0 30–0 38
Beef (very lean)	0 40
Apples	0 38
Halibut	0 38–0 43
Turkey	0 42
*Cocoa	0 43
Oranges	0 47
CLASS V.	
Cabbage	0 58
Eggs	0 60
Grapes	0 60
Cod (steak)	1 09
Soups	0 96–2 40
Tomatoes	3 33
Cucumbers	3 70
Bouillon	4 80

*Cocoa yields 2,320 energy units per lb. at (say) $1. On this basis 1,000 energy units cost $100 \times 1000 \div 2320 = 43$ cents. The cost ranges down as low as 21.7 cents with the cheaper grade cocoas, which contain more fat.

Cheap Foods.

From Table III it is obvious that *to live very cheaply*, but with due regard to efficiency, the dietary should consist largely of such things as bread, oatmeal, milk, butter, cheese, and bacon. If we allow a more liberal expenditure, we can add meats to this dietary. As will be seen later, however, a small amount of *fresh fruit*, though almost of no value in yielding energy, is advisable.

PART II.

GROWTH AND MAINTENANCE VALUE OF FOOD.

So far we have dealt with the fuel value only of the food. But there are other considerations. Even if your dietary yields 2,500 energy units per day, that is not sufficient. You must take proteins to an amount we shall discuss immediately, and in addition some "roughage" or "ballast" to prevent constipation, and fresh food containing the all-important "accessory factors" or "vitamines." No dietary is really economical if it does not contain these in sufficient volume.

The Indispensable Proteins.

Proteins are absolutely essential to life. Daily the human body loses protein by wear and tear, and this must be replaced. Proteins enter into the composition of every living body and are consequently necessary for the building up of the human machine. A thousand and one different proteins exist, and they differ from each other because the units of which they are composed are different. This difference in composition results in a difference in their food value. Experiment has shown that not all proteins are equally valuable in building up and repairing the body. Thus 30 parts by weight of meat protein and 31 parts by weight of milk protein are as effective as 54 parts of bean protein, 76 parts of bread protein and 102 parts of Indian corn protein.

As a generalization we may, therefore, say that *animal proteins (contained in meats, milk, eggs, etc.) are more efficacious than plant proteins in providing for body growth and maintenance.*

The old argument for *vegetarianism* (viz., that plant foods provide proteins in reasonable amount) *is shown to be unsound.* Animal proteins are more nearly like human proteins, and *anyone who omits animal foods from his dietary is running very considerable risk.*

The Daily Protein Ration.

Men left to themselves instinctively consume about $3\frac{1}{2}$ ounces of protein daily, and though this amount can be cut down markedly, even for long periods, those who have done so usually return to the old regime. Instinct, a good guide, in the absence of the clearest evidence to the contrary, leads us to consume protein that represents about 15 per cent of the total energy value. The figures already given in Table II on page 24 show the percentage of protein contained in animal foods and plant foods of various kinds.

But seeing that animal foods are relatively costly, it is advantageous to replace as much as we can of them with plant foods. As stated on the preceding page, the body can maintain its balance of protein on as little as 30 grammes ($1\frac{1}{17}$ oz.) of meat protein, compared with 102 grammes ($3\frac{3}{5}$ oz.) of Indian corn protein. If then we obtain $1\frac{1}{17}$ oz. of animal protein per day, and make up the remainder of the necessary 375 energy units from plant protein, we are on the safe side. This is approximately one part of animal protein to two of plant protein. Five per cent of the total energy units requisite should be taken as animal protein and ten per cent as plant protein. It will, therefore, be seen that a diet containing either 4 oz. of cheese, 10 oz. of cod, 2 pints of milk, 4 eggs or 8 oz. of beef, will supply all the animal protein necessary per day; $1\frac{1}{2}$ lbs. of bread will supply the remainder of the indispensable protein.

Briefly: animal proteins should yield 5 per cent, plant proteins 10 per cent, and fats and carbohydrates the remaining 85 per cent of the total energy units.

Sample Dietaries.

Examples of dietaries that yield approximately 2,500 units of energy per day and contain sufficient animal and vegetable protein, are given on the next page.

EXAMPLES OF DAILY DIETARIES.

1. A diet yielding 2,440 units per day.

BREAKFAST.—1 egg; bread, 4 oz.; butter, ½ oz.; marmalade, ½ oz.; coffee; milk, 7 oz.

DINNER.—Meat, 5½ oz. (3 to 4 oz. cooked), stewed with carrot, onion, turnip or potatoes, 2 oz. and unpearled barley, 1 oz.; green vegetables, 4 oz.; bread, 4 oz.; butter, ½ oz.; milk, 3 oz.; milk pudding, 5 oz.

SUPPER or Lunch .—Bread, 4 oz.; fish, 4 oz.; butter, ½ oz.; cheese 1 oz.; stewed fruit, 5 oz.

Such a dietary is suitable for a man doing sedentary work and is moderate (though not cheap) in cost. It will be seen that it contains more than sufficient animal and vegetable protein.

A more economical dietary is the following:—

*2. A diet yielding 2,480 units per day.

BREAKFAST.—Oatmeal, 2 oz.; skimmed milk, 10 oz. (½ pint); bread 6 oz.; butter, ½ oz.; sugar, ½ oz.

DINNER.—Bread, 4 oz.; meat, 4 oz.; potatoes, 4 oz.; rice, 1 oz. boiled with skimmed milk, 10 oz.; and sugar, ½ oz.

SUPPER.—Cheese, 2 oz.; bread, 6 oz.

With tea, coffee or cocoa this dietary could be obtained at a cost for raw materials of about 25 cents per day. Dietaries costing even less than this can be constructed. The potatoes and buttermilk diet of the Irish peasants, and the oatmeal, milk and salt herrings diet of the Scotch are famous examples.

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3. A restaurant dietary yielding 2,630 units.

	Cost, cents.
BREAKFAST—	
Coffee (with milk and sugar)	5
Corn meal cakes and maple syrup	10
LUNCH—	
Roast beef hash (browned), bread and butter	15
Cup of cocoa	5
DINNER—	
Roast beef cutlet and mashed potatoes, bread and butter	15
Bread custard pudding	5
Total	55 cts.

* Unless whole meal bread is used this dietary is deficient in "roughage" (see next page.)

"Roughage."

All diets should contain fibrous material to stimulate the walls of the stomach and intestines. Such roughage is found in nearly all vegetables; and whole meal bread, containing as it does the bran of the wheat, is excellent for the purpose. Whole meal is one of the best ways of obtaining not only "roughage" but also the "accessory factors" discussed in the next section.

"Accessory Factors"

(Often called Vitamines).

Aids to Growth. The first conclusive evidence to the effect, that some substances besides protein, fat, carbohydrate and mineral salts, are absolutely necessary for growth and maintenance of life was given by Hopkins in 1912. He showed that animals fed on pure protein, pure fat, and pure carbohydrates, with the addition of the normal mineral salts of the dietary and water, would not thrive. Immature animals on such a dietary would not grow. But so soon as a minute quantity of fresh unsterilized milk, mangold juice, or yeast extract was added, the animals grew and throve as well as animals on a normal dietary. Butter fat and cod liver oil also were efficacious. Animals fed on whole meal bread thrive as well as those on a mixed diet, but on white bread there is a marked failure to grow.

Deficiency Diseases. Parallel to the evidence of the need of accessory substances for growth, evidence was springing up to the effect that such factors were also necessary to health. Human beings eating polished rice exclusively, i.e., rice from which the hulls have been removed, develop the disease beri-beri. This disease disappears again if the patient takes unpolished rice, or beans, or fresh meat. It has also been known for a long time that a diet that consists largely of biscuit, salt meat, and jam will induce scurvy, which often appears in lumber camps, Arctic expeditions, and on sailing vessels. This is warded off by fresh meat, fresh vegetables, or fruit juices. Infantile scurvy (Barlow's Disease) appears even in some of the best managed hospitals if the infants are fed on sterilized milk alone. It disappears if a little orange juice be added to the dietary. Unsterilized milk, dangerous in other respects, will ward off the disease. There have recently been serious outbreaks of the

disease pellagra in the United States. This seems to be the result of a too exclusive use of wheat and corn, from which substances that are indispensable to health have been removed in the process of milling.

An Important Precaution.

Therefore, if, in spite of the higher cost per energy unit, we are not careful to eat some small amount of fresh fruit, fresh meat or fresh vegetables, we are running the risk of developing some of the deficiency diseases, or of stunting the growth of children given such dietaries.

OF VITAL INTEREST.

It is well to say that the facts presented above are not merely of academic importance. They are of vital importance to every one of us. There is too much extravagance in food; there is too much deficiency disease, too many children are stunted in growth, too much money is spent for that which is not food. *Ill-nutrition and disease are too often the results of unskilled marketing.*

For the convenience of the reader, the facts brought out in this publication are summarized below.

SUMMARY.

1. For Economy.

Eat bacon, butter, cheese, milk, dried fruits, dried beans, potatoes, oatmeal, flour, bread, and dishes made from these.

2. To Maintain Growth and Health.

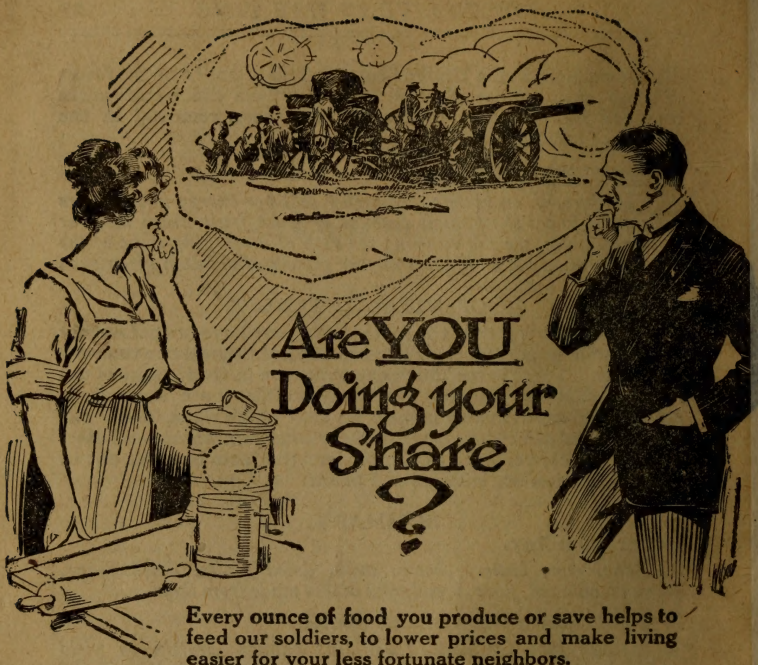
(a) *See that the dietary contains enough protein to yield approximately 15 per cent of the energy units taken per day. (2,500 energy units for the average man.)*

(b) *At least one-third of the protein intake should be animal protein, such as in meats, dairy products, eggs, etc. The rest may be protein of a vegetable origin.*

(c) *Include in the dietary some "roughage", of which whole meal bread is an admirable source.*

(d) *To supply accessory factors, include in your diet a small amount of either fresh fruit, fresh vegetables, clean unsterilized milk, fresh meat, fresh butter, or use whole wheat bread.*

☞ *Examples of daily dietaries will be found on Page 29.*



Every ounce of food you produce or save helps to feed our soldiers, to lower prices and make living easier for your less fortunate neighbors.

Every dollar you can save and invest in

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helps to win the War and to strengthen Canada's present and future position by keeping the war debt with its interest payments here at home.

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